

CLAIM STATUS

1-20. (cancelled)

21. (Currently amended) An *in vitro* reaction system for synthesis of fucose-containing oligosaccharides comprising a an isolated fucosyltransferase and a catalytic amount of ~~a~~ an isolated nucleoside-diphospho fucose forming enzyme that are present together. ~~utilized in a single reaction mixture.~~

22. (Previously presented) The *in vitro* reaction system of claim 21 wherein the nucleoside-diphospho fucose forming enzyme is guanosine diphospho-fucose pyrophosphorylase.

23. (Previously presented) The *in vitro* reaction system of claim 21 which further comprises a kinase.

24. (Original) The *in vitro* reaction system of claim 23 further comprising a pyruvate kinase.

25. (Previously presented) The *in vitro* reaction system of claim 23 wherein the kinase is a fucose kinase.

26. (Previously presented) The *in vitro* reaction system of claim 56 further comprising a NADPH regeneration system.

27. Cancelled.

28. (Previously presented) The *in vitro* reaction system of claim 53 wherein guanosine diphosphate mannose is

generated *in situ* from guanosine triphosphate and mannose-1-phosphate.

29. (Previously presented) The *in vitro* reaction system of claim 28 which further comprises pyruvate kinase and guanosine diphospho-mannose pyrophosphorylase.

30-51. (Cancelled)

52. (Previously presented) The *in vitro* reaction system of claim 21 further including a catalytic amount of GDP, GTP or both GDP and GTP.

53. (Previously presented) The *in vitro* reaction system of claim 21 wherein said nucleoside-diphospho fucose forming enzyme forms GDP-fucose from GDP-mannose.

54. (Currently amended) An *in vitro* reaction system comprising a fucosyltransferase, a catalytic amount of a guanosine diphospho-fucose pyrophosphorylase and a catalytic amount of GDP, GTP or both GDP and GTP that are present together. ~~utilized in a single reaction mixture.~~

55. (Previously presented) The *in vitro* reaction system of claim 54 which further comprises one or both of a pyruvate kinase and a fucose kinase.

56. (Currently amended) An *in vitro* reaction system comprising a fucosyltransferase, a catalytic amount of a guanosine diphospho-mannose pyrophosphorylase and a catalytic

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amount of GDP, GTP or both GDP and GTP that are present together. ~~utilized in a single reaction mixture.~~

57. (Previously presented) The *in vitro* reaction system of claim 56 which further comprises pyruvate kinase.